S/193/60/000/012/002/018
A004/A001

AUTHOR: Gol'dshteyn, Ya. Ye.

TITLE: The High-Strength Economical 20ХГНР (20KhGNR) Steel

PERIODICAL: Byulleten' tekhniko-ekonomicheskoy informatsii, 1960, No. 12, pp.9-12

TEXT: The Chelyabinskiy traktornyy zavod (Chelyabinsk Tractor Plant), ChTZ, together with the Chelyabinskiy politekhnicheskiy institut (Chelyabinsk Polytechnic Institute) has developed the 20KhGNR grade steel, which was then improved and prepared for big-scale industrial use by the Nauchno-issledovatel'skiy institut metallurgii (Scientific Research Institute of Metallurgy) at Chelyabinsk with the cooperation of the Zlatoustovskiy and Chelyabinskiy metallurgicheskiy zavod (Zlatoust and Chelyabinsk Metallurgical Plants). The 20KhGNR grade steel, as it was registered (ChMTU No. 178-59) at the Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (Central Scientific Research Institute of Ferrous Metallurgy) TsNIIChERMET contains (in %): carbon - 0.16-0.23; chromium - 0.7-0.1; manganese - 0.7-1.1; nickel - 0.8-1.1; silicon - 0.17-0.37; boron - 0.003. The steel was to possess the following minimum mechanical properties: tensile strength - 130 kg/mm^2; yield strength - 120 kg/mm^2; elongation per unit length -

Card 1/4

S/193/60/000/012/002/018
A004/A001

The High-Strength Economical 20ХГНР (20KhGNR) Steel

10%; cross-section construction - 50%; impact strength - 9 kgm/cm^2. Based on the checking results of 8,000 tons of 20KnGNR steel produced by various plants it was found that the actual strength and plastic properties considerably exceeded the technical requirements. These results were obtained owing to the careful development of deoxidation technology and strict dosing of the boron and titanium additives, worked out in cooperation with the Tsentral'naya zavodskaya laboratoriya (Central Plant Laboratory) of the Zlatoust Metallurgical Plant, G. A. Khasin, L. I. Posysayeva, and R. I. Kolesnikov participating. It was found that the boron content of the steel should amount to 0.0005 - 0.002%, and not 0.003 - 0.006 % as this is recommended in the technical literature and in the technical conditions of the TsNIIChERMET, otherwise a separation of the boron phase can be observed in the macrostructure of the steel along the boundaries of former austenite grains, as a result of which the impact strength of the steel would be reduced. A significant characteristic of the 20KhGNR steel is its hardenability, exceeding that of the 12ХН3А (12KhNZA), 20ХН3А (20KhNZA), 10ХГР (10KhGR) and other grades by far. The author points out that the hardenability and mechanical properties of the 20 KhGNR grade steel depend on the deoxidation conditions of the steel, i. e. on the fact how energetically the steel, before adding boron, was denitrated by aluminum and titanium. The presence of a certain minimum of residual aluminum (Al $\geqslant$ 0.04%) and titanium (Ti $\geqslant$ 0.02%) in the steel ensures the effect of the boron addition. Special investigations of the tendency of 20KhGNR steel to cold-shortness, compared to that of the 20KhNZA steel, showed that the 20KhGNR steel is not very sensitive to temperature reductions and, in this respect, is not inferior to the 20KhNZA grade. This is explained by the favorable manganese-to-carbon ratio in the steel $\left(\frac{(4-5)}{1}\right)$, which results in a reduction of the cold-shortness threshold. The presence of nickel (0.8 - 1.1%) in the 20KhGNR grade steel favourably affects its cementation ability, reducing the tendency of the surface layer of the steel to supersaturation with carbides. An even lower carbon content (0.9 - 1.05%) in the surface layer of 20KhGNR steel can be obtained by gas cementation. At the ChTZ 20KhGNR steel parts are cemented both in solid carburizing agents and in gas-cementation furnaces. In the latter case, the parts are slowly cooled down in the pit to prevent the origination of microcracks in the cemented layer. At present the new 20KhGNR grade steel has not only been introduced in the manufacture of tractor parts at the ChTZ, but also at the Khar'kovskiy traktornyy zavod (Khar'kov Tractor Plant), Minskiy traktornyy zavod (Minsk Tractor Plant), Luganskiy parovozostroitel'nyy zavod (Lugansk Locomotive Plant), at the enterprises of the Azerbaijan Oil Industry and other industrial enterprises. At the All-Union Conference on problems of expedient utilization of the nickel from the Orsk-Khalilovo deposits, convened by the Gosplan USSR and taking place from the 14th to the 18th June, 1960, at Chelyabinsk, the resolution was passed to ask the Gosplan USSR to prohibit the use of the 20KhNZA grade steel as from January 1st, 1961, in the automotive and tractor industry, agricultural, road-building, transport and mining machine industries. The first two heats of 20KhGNR steel, weighing more than 450 tons, produced on the initiative of the Scientific Research Institute of Metallurgy (professor A. N. Morozov and M. I. Kolosov, Candidate of Technical Science) in the Siemens-Martin furnaces of the Orsko-Khalilovskiy metallurgicheskiy kombinat (Orsk-Khalilovo Metallurgical Combine) and rolled at the Chelyabinsk Metallurgical Plant were successfully used at the plants of the Chelyabinsk Sovnarkhoz and at the Minsk Tractor Plant. There is 1 figure.

GOL'DSHTEYN, Yakov Yefimovich, kand. tekhn. nauk; GORBUL'SKIY, Il'ya Yakovlevich, inzh.; Prinimal uchastiye PYATKOVA, L.L., inzh.; DUGINA, N.A., tekhn. red.

[Increasing the durability of tractor parts] Povyshenie dolgovechnosti traktornykh detalei. Izd.2. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1961. 199 p. (MIRA 15:2)

(Cast iron—Hardening) (Steel--Hardening)

27232 S/133/61/000/009/[illegible]
A054/A127

18 1111

AUTHORS: Gol'dshteyn, Ya. Ye., Candidate of Technical Sciences, Zhiznakina, O. D., Engineer

TITLE: Selenium in cast and structural steels

PERIODICAL: Stal', 21 no. 9, 1961, 835 - 844

TEXT: The authors investigated the effect of various selenium additions on the structure and properties of ordinary carbon steel and steels alloyed with manganese, chromium or copper respectively. They present the phase diagrams of Se-Fe, Mn, Cr and Cu and describe tests of the 40СЛК (40LK) grade steel melted in a 50-kg induction furnace with acidic hearth. The composition of various fractions processed from one heat are given in a table, which shows that by adding selenium, the manganese content of the steel decreases, while above a carbon content of 0.13% the increase in selenium content of carbon steel becomes slower. When adding more than 0.13% selenium, the macrostructure of carbon steel will be modified. The effect of selenium on the mechanical properties of 40LK steel was tested after normalizing the specimens at 900°C. The following values were obtained:

Card 1/5

27732 S/1[illegible]/61/000/0[illegible]/[illegible]
A[illegible]/A1[illegible]

Selenium in cast and structural steels

Fraction	σ_B, kg/mm^2	σ_S, kg/mm^2	δ, %	ψ, %	a_K, kgm/cm^2
I	68.9	43.5	11.7	16.[illegible]	4.[illegible]
II	66.9	50.7	17.[illegible]	[illegible]	5.[illegible]
III	60.8	47.4	7.[illegible]	14.[illegible]	4.
IV	51.6	43.6	4.[illegible]	6.[illegible]	[illegible]
V	42.4	-	1.[illegible]	3.0	1.

These data show that an addition of up to 0.05% Se to commercial carbon steel improves the mechanical properties while an addition of more than the above quantity makes these properties gradually deteriorate. The change in mechanical parameters must be put down to a modified microstructure and macrostructure. The improvement in mechanical properties when adding not more than 0.05% Se is mainly due to the change in the structure and behavior of sulfides and their separation under the effect of selenium. Increased amounts of selenium also increase the size and the number of sulfo-selenide globules which results in an inhomogeneous structure. Carbon steels with more than 0.15% selenium addition in comparison with magnesium-modified iron castings show a good weldability and only a slight tendency to shrinkage and hot and cold welding cracks. When adding not more than 0.05% Se, the cutting conditions for turning, drilling and [illegible] operations can be raised by

Card 2/5

27532 S/133/[illegible]
A054/A1[illegible]

Selenium in cast and structural steels

15 - 20% while the consumption of cutting tools is reduced by [illegible] - 30%. If the residual selenium content is increased to 0.15 - 0.25%, the mechanical [illegible] castings will attain the level of forged steel. The effect of selenium on [illegible] tural steel was studied on grade "45" steel. The metal was cast in [illegible] specimens, 15 x 15 x 50 mm in size, were cut, normalized at 860°C, water-hardened at 840°C and annealed at 600°C (also in water). The mechanical properties [illegible] of the various fractures are given in a table. The changes in the mechanical properties of selenium-containing, normalized steel (strong effect of [illegible] mainly on ductility, lower sensitivity of relative elongation and [illegible] to the selenium content, etc.) prove the surface activity of selenium and its presence not only in chemical compounds, but also in solution. The effect of the sulfo-selenide content on the mechanical properties of structural steel was investigated on a steel containing 0.45% C; 0.25% Si; 0.[illegible]1% Mn; [illegible], [illegible]; 0.04% Cr; 0.07% Ni and 0.14% Se which showed the following characteristics (numerator: after normalization; denominator: after normalization and [illegible])

σ_B, kg/mm²	σ_s, kg/mm²	δ, %	ψ, %	a_k, kgm/cm²	d_B, mm
76.4	60.1	20.0	30.5	3.8	4.2
83.5	73.7	12.6	20.7	3.2	[illegible]

Card 3/5

27232 [illegible]

Selenium in cast and structural steels [illegible]

The higher level of ductility and dynamic toughness of the [illegible] steel specimen [illegible] can be explained by an accelerated cooling of the steel in the [illegible] which results in the crushing of crystallites and nonmetallic inclusions, and in a high density of the metal. It was possible to raise the selenium content of this steel to 0.1 - 0.15% without impairing its mechanical properties, while at the same time improving its workability by a factor of 1. . [illegible] added to steels with pearlitic structure depends on [illegible] the mechanical properties required. The effect of selenium on [illegible] steels (15Л [15L]; 18Х2 [18Kh2]; 18Д2 [18D2]) was investigated after [illegible] and tempering (at 660°C) and low annealing at [illegible]. [illegible] the activity of selenium in the steel depends to a great [illegible] other alloying elements and their individual or combined [illegible] the grain boundaries. With the same selenium content 18Д [illegible] possess more stable mechanical properties than 18Kh2 [illegible] steel. After hardening and low-temperature annealing the notch toughness [illegible] ing 0.04 - 0.06% selenium increases, whereas in [illegible] with the same selenium content. Selenium [illegible] alloyed steels. [illegible]

Card 4/

27932

Selenium in cast and structural steels

S/133/61/000/009/009/011
A054/A127

and 18Kh2 steels it was established that the hardenability of the steel decreased upon adding selenium and that the steel structure obtained a ferritic character. The addition of selenium is therefore one of the few methods suitable to decrease the hardenability. It was found, with regard to the effect of selenium on lithoidal fracture, that small amounts of selenium added to the steel grades 45, 18G2 and 18Kh2 increased their inclination to lithoidal fracture during overheating. When, however, the selenium-content was raised above 0.08 - 0.09%, this tendency decreased. This controversial behavior of steels with small and larger amounts of selenium can be explained by the effect of selenium on the separation and distribution of sulfo-selenides in the overheated steel. By adding up to 0.1% selenium to the steel, the formation of sulfo-selenides is promoted and these, in turn, also reduce the tendency to lithoidal fractures. There are 19 figures and 6 tables.

Card 5/5

BALZHI, M.F.; BEREZKIN, P.N.; GOL'DSHTEYN, Ya.Ye.; GAL'PERIN, Ye.B.;
YEDLICHKO, V.V.; KERAS, A.F.; LEKUS, I.D.; POTEKUSHIN, N.V.;
POZDNYSHEV, V.M.; SUBBOTIN, N.A.; SAVINTSEV, P.I.; TAMAROVSKIY,
V.M.; SHEREMET'YEV, A.D.; BAKSHI, O.A., kand. tekhn. nauk,
retsenzent; BONDIN, Ye.A., inzh., retsenzent; BOYKO, F.I., inzh.,
retsenzent; VASIN, Yu.P., inzh., retsenzent; LAZAREV, A.A., inzh.,
retsenzent; SOROKIN, A.I., inzh., retsenzent; KON'KOV, Arkadiy
Sergeyevich, dots., red.; DUGINA, N.A., tekhn. red.

[Economy of metals in the machinery industry]Ekonomiia metallov
v mashinostroenii. [By]M.F.Balzhi i dr. Moskva, Mashgiz, 1962.
235 p. (MIRA 16:2)
(Machinery--Design and construction)
(Metals, Substitutes for)

24079
S/133/62/000/003/004/008
A054/A127

187520

AUTHORS: Gol'dshteyn, Ya. Ye., Candidate of Technical Sciences, [illegible] V. I., Keys, N. V., Kossovskiy, L. D., Vaynshteyn, D. Ya., Shmatko, N. G., Engineers

TITLE: The effect of treating liquid chrome-nickel steel with cerium on the crystallization

PERIODICAL: Stal', no. 3, 1962, 258 - 261

TEXT: Tests were carried out to study the effect of adding ferrocerium to chrome-nickel structural steel on the flake formation and crystallization. The tests were based on the chemical affinity of cerium to hydrogen, which is reduced when the temperature is raised. As rare-earth metals readily tend to absorb hydrogen in the 200 - 500°C range, where the hydrogen separation from the metal is particularly intensive, this phenomenon can be used to reduce flaking. Four 40 (40ХНМ) steel ingots of the same melt were tested: one, checking specimen, without ferrocerium, the others containing 0.1, 0.25 and 0.5% ferrocerium, respectively. Lumps of ferrocerium, containing 94% rare-earth metal (primarily cerium) were used. The ingots were top-cast and weighed 2.5 t n. Lateral macrotemplates,

Card 1/3

S/133/60/000/005/004/013
A054/A127

The effect of treating...

cut from bl[illegible] [illegible] from the test ingots, (air-dried [illegible] [illegible], [illegible]) were analyzed after [illegible] months. Flakes were not found in samples from steel to which at least [illegible] ferrocerium was added. The analysis also showed that the effect of cerium (lanthanum, etc.) actually does not manifest itself in the elimination of hydrogen, but [illegible]. In steel, containing as much as [illegible] cm³ hydrogen/100 g, there was no flaking, due to the addition of [illegible] ferrocerium, while flakes were found in steel containing not more than [illegible] cm³/100 g hydrogen, if not treated with cerium. When ferrocerium is added to the liquid steel in amounts above [illegible], the pattern of dendritic crystallization changes and sulfur will be re-distributed in the micro-areas of the metal. High-melting cerium-sulfides pass from the interaxial areas into the dendritic axes. When ferrocerium is added in amounts of up to [illegible], dendritic crystallization disappears, and, under the effect of cerium, the steel is cleaned from sulfur, antimony, stannum, bismuth, lead, etc. [illegible] ferrocerium reduces the sulfur-content of the metal [illegible] times. However, when ferrocerium is added in the ingot mold, the cerium-sulfides (oxy-sulfides) cannot entirely be removed into the slag and the feeding head. This results in a nonhomogeneity of the boundary zone. The high-temperature cerium-sulfides (oxy-sulfides of intricate composition) are forming already in the period prior to crystallization

Card 2/3

[illegible]
[illegible]

The effect of [illegible]...

[illegible] moved to the ingot surface during the casting. The [illegible] in the [illegible] by an increase of the heat temperature. Cerium-containing steel with [illegible] in the boundary zone shows a [illegible]. This can be [illegible] by adding ferrocerium in the ladle instead of in the ingot mold, [illegible] before pulling. The addition of ferrocerium in amounts of [illegible] .15% prevents [illegible] high [illegible] sulfur is bonded in the form of cerium-sulfides with a high melting point. There are 5 figures and 9 references: 8 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: Russ., J. [illegible] Metals, no. 4, 1954, 438 - 442.

ASSOCIATION: Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii (Chelyabinsk Scientific Research Institute of Metallurgy) and Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant

Card 3/3

S/133/62/000/004/007/008
A054/A127

AUTHORS: Gol'dshteyn, Ya.Ye., Candidate of Technical Sciences; Balakhovskaya, [illegible]

TITLE: [illegible] (Kh2N2MVA) grade [illegible]

PERIODICAL: [illegible]

TEXT: [illegible] institut metallurgii (Chelyabinsk [illegible] Research Institute of Metallurgy), in cooperation with the Chelyabinskiy [illegible] Plant), the Zlatoustovskiy metallurgicheskiy zavod [illegible] and the Chelyabinskiy [illegible] have developed a new medium-[illegible] high-strength nickel-containing [illegible] 45Kh[illegible] (Kh2N2MVA), [illegible] 0.35 C; 1.4 - 1.8 Cr; [illegible] Mn; [illegible] ≤0.025 S; and ≤0.025 P; its [illegible] 600°C. It is fairly resistant to [illegible] the mechanical prop-

Card 1/5

grades of the [illegible] the exception of the strength [illegible] are given in the [illegible]:

[illegible]	σ_B	[illegible]	[illegible]	[illegible]	[illegible]	a_k
2[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2,7—2,8
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2,7
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2,9—3,[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2,9—3,[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3,4—3,5
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]—3,45

A high strength is preserved [illegible] up to [illegible]; beyond this the strength is lowered [illegible] is above [illegible] kg/mm² even after tempering at 6[illegible]. The [illegible] of manganese, silicon and tungsten gives the new grade [illegible] properties and this, in turn, ensures a homogeneous structure of large-diameter [illegible] this steel grade. . The

Card 2/5

S/133/62/000/004/007/008
A054/A127

The properties [illegible] high-strength ....

[illegible] taken from [illegible] tempered at various [illegible] -100°C, thus it [illegible] A difference in the properties [illegible] by the presence of manganese [illegible] could not be observed in the [illegible] practically the same [illegible] were carried out to compare [illegible] the new steel with specimens, [illegible] (corresponding to a 3.5 mm [illegible]). The new grade was less resistant to [illegible] brittleness than the [illegible] grade. When having a lower [illegible] the new grade is more resistant [illegible] containing nickel, although as to absolute values, [illegible] toughness of the new grade is lower. The 35Kh2GSVA grade [illegible] with high-frequency current heating. [illegible] specimens, 16 and 32 mm in diameter, after oil-hardening at [illegible] and tempering at [illegible]. In the tests a tube generator ([illegible] with a [illegible] inductor) and a

Card 3/5

[illegible]/007/008
[illegible]

The properties of [illegible]

machine [illegible], [illegible] mm in diameter and 15 [illegible] treatment are [illegible] high-frequency hardening [illegible]:

Water [illegible] .... [illegible]
After [illegible]
cooling [illegible] .... [illegible]
Idem, interval [illegible] .... [illegible]
After heating an interval [illegible]
cooling [illegible] .... [illegible]
Interval [illegible] .... [illegible]

The tendency to [illegible] specimens with sharp edges. After [illegible] current 3.5 - 4.0 [illegible] the edges appeared [illegible], which shows [illegible] according to the test results [illegible] steels by the new steel grade, of which products [illegible] of strength and notch

Card 4/[illegible]

S/133/62/000/004/007/008
The properties of the high-strength A054/A127

[illegible] relations between the characteristic values:

[illegible]

There are 5 figures.

ASSOCIATION: [illegible] (Chelyabinsk Scientific Research Institute)

Card 5/5

S/122/62/000/005/002/004
D234/D308

AUTHOR: Gol'dshteyn, Ya.Ye., Candidate of Technical Sciences

TITLE: New economically alloyed cemented steels containing boron

PERIODICAL: Vestnik mashinostroyeniya, no. 5, 1962, 44 - 48

TEXT: The author describes four new types of steel developed by NIIM at Chelyabinsk jointly with the Chelyabinsk Tractor Factory, Sverdlovsk Jet Engine Factory, Zlatoust and Chelyabinsk Metallurgical Works, and recommended for use instead of several old types. Hardening capacity, impact ductility and mechanical properties of the new steels are compared with those of the old ones. A table of chemical compositions is given. There are 5 figures and 1 table.

Card 1/1

S/277/63/000/004/003/013
A004/A127

AUTHORS: Gol'dshteyn, Ya.Ye., Spirkina, G.V.

TITLE: Steels 15ХНГ2ВА (15KhNG2VA) and 15Х2Г2СВА (15Kh2G2SVA) as replacements for 18Х2Н4ВА (18Kh2N4VA) steel for fuel apparatus components

PERIODICAL: Referativnyy zhurnal. Otdel'nyy vypusk. 48. Mashinostroitel'nyye materialy, konstruktsii i raschet detaley mashin, no. 4, 1963, 12, abstract 4.48.78. (Traktory i sel'khozmashiny, 1962, no. 6, 39 - 42)

TEXT: The authors present the chemical compositions, physico-mechanical properties and heat-treatment conditions of the steel grades 15KhNG2VA and 15Kh2G2SVA which are characterized by a lower Ni-content. These steel grades are recommended for the manufacture of precision components of fuel apparatus.

[Abstracter's note: Complete translation.]

Card 1/1

S/129/62/000/012/003/013
E073/E351

AUTHORS: Gol'dshteyn, Ya.Ye., Candidate of Technical Sciences and Charushnikova, G.A., Engineer

TITLE: Influence of nickel on low-temperature brittleness of steel

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, no. 12, 1962, 12 - 15

TEXT: The influence of Ni additions of 0.1, 1.1, 2.6 and 4.5% on the impact strength and sensitivity to lowering the brittle fracture transition temperature was investigated for experimental induction-melted steels with C contents of 0.18, 0.33, 0.45 and 0.50%, and 0.16-0.27% Si, 0.48-0.80% Mn, 0.032-0.033% S, 0.021-0.027% P, 0.08-0.11% Cr, 0.056-0.099% Al. From forged rods, 32 x 32 mm, normalized at 880-900 °C, high-temperature annealed and hardened at temperatures 30 °C above Ac_3 and then tempered, specimens of 11 x 11 mm cross-section were cut (to ensure through-hardening); low-carbon steel specimens were water-quenched - the others oil-quenched. The influence of the tempering temperature (20 - 600 °C) on the impact strength of specimens water-cooled after tempering was studied and the influence of Ni on the brittle
Card 1/2

S/129/62/000/012/003/013
Influence of nickel E073/E351

fracture transition of specimens tempered to HB 240 and 340 (0.18% C steels were tempered at 200 °C). Steels with different chemical compositions were tempered from different temperatures to obtain equal hardness. Conclusions: nickel additions to low-carbon steel (0.18%) increase the impact strength and lower the brittle fracture temperature; in low-temperature tempered steel the lowest brittle fracture temperature (-60 °C) is obtained for steel with 4.5% Ni but steel tempered to HB 240 requires only 2.5% Ni to give the lowest brittle fracture temperature (-50 °C). If the carbon content is above 0.33%, nickel additions no longer have a favourable effect (high-temperature tempering) and may even become unfavourable. The quantity of Ni required to bring about an unfavourable influence is lower the higher the carbon content. There are 1 figure and 3 tables.

ASSOCIATION: Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii (Chelyabinsk Scientific-research Institute of Metallurgy)

Card 2/2

GOL'DSHTEYN, Ya.Ye.; kand.tekhn.nauk; SHIRKINA, G.V., inzh.

Steel 15Kh2G2SVA and 18Kh2N4VA as a substitute for 18Kh2N4VA steel used in the manufacture of combustion system components. Trakt. i sel'khozmash. 32 no.6.39-42 Je '62. (MIRA 15:6)

1. Chelyabinskiy NIIM.

(Steel)

AM4006613 BOOK EXPLOITATION S/

Gol'dshteyn, Ya. Ye

Low-alloy steels in machine building (Nizkolegirovanny*ye stali v mashinostroyenii), Moscow, Mashgiz, 1963. 239 p. illus., biblio. 6500 copies printed

TOPIC TAGS: low alloy steel, structural steel, steel structure, steel property, steel cold brittleness, steel hardenability, carburizing steel, cold resistant steel, low hardenability steel, high hardenability steel, high strength steel, low carbon steel, medium carbon steel

PURPOSE AND COVERAGE: This book is intended for heat-treatment specialists, metallurgists, and designers. It deals with an important machine-building problem: the use of low-alloy steels which contain no scarce alloying elements, but which are nevertheless characterized by high mechanical properties. Principles of new methods of producing and alloying structural steel are discussed. The characteristics of economical nickelless and low-nickel steels

Card 1/3

AM4006613

are given. New information on cold-resistant steels, types of these steels, and methods of their treatment is given. New data are presented on the effect of various impurities (nitrogen, tin, antimony, etc.) on the properties of steels and their susceptibility to temper brittleness. The book is based on experience with new steels gained in the Chelyabinsk Tractor Plant, the Sverdlovsk Turbo-engine Plant, and the Ural Automotive Plant in Miass, in various Ukrainian industrial concerns, and on investigations conducted by the author at the Institute of Metallurgy and the Chelyabinsk Tractor Plant with the assistance of M. B. Balakhovskaya, A. Ya. Zaslavskiy, A. L. Starikova, G. V. Spirkina, G. A. Charushnikova, O. D. Zhizhakina, and others.

TABLE OF CONTENTS:

Foreword -- 3

Ch. I. Present trends in the production of low-alloy structural steels -- 5

Card 2/5

GOL'DSHTEYN, Ia.Ie. (Chelyabinsk); [illegible] [illegible], [illegible] ([illegible]);
BEL[illegible]V, A.M. (Chelyabinsk)

Characteristics of phase transformations, structure, and properties of manganese steel. Izv. AN SSSR. Otd. tekh. nauk. Met. i gor. delo no.4:[illegible]-111 Jl-Ag '63. (MIRA 16:10)

ACCESSION NR: AR4018335 S/0137/64/000/001/I080/I080

SOURCE: RZh. Metallurgiya, Abs. 1I505

AUTHOR: Gol'dshteyn, Ya. Ye.; Starikova, A. L.

TITLE: The influence of boron and titanium on temper brittleness

CITED SOURCE: Sb. Teoriya i praktika metallurgii. Vy*p. 5, Chelyabinsk, 1963, 107-122

TOPIC TAGS: low carbon steel, titanium steel, low carbon steel brittleness, shrinkage, shrinkage brittleness, boron steel, temper brittleness

TRANSLATION: The influence of B and Ti on temper brittleness of low-carbon steel was studied. The admixtures under study were introduced into individual proportions of liquid steel either separately or in combination with Si, Mn, Cr, and Mo; a_k and structure were determined on heat-treated samples at temperatures from minus 80 to plus 20 degrees. It was determined, that the temper brittleness of steel containing boron depends upon its basic composition. In pure Fe and in steel not inclined toward temper brittleness, B in the amount of 0.003% has little practical influence on a_k. In steel inclined toward temper brittleness,

Card 1/2

ACCESSION NR: AR4018335

a_k is lowered commensurate with the increase in content of B, Mn, and P. The brittleness of low-carbon steel sometimes increases with an inclusion of Ti (0.01%), the influence of which rises commensurate with the decrease in carbon content (meaning that as it decreases, more and more titanium is outside the carbide phase). In consideration of the favorable influence of Ti in obtaining residual fine-graininess of steel, it is recommended for inclusion in structural steels within the limits of 0.02-0.06%. Mo does not always lower the temper brittleness of structural steel, and its optimum content depends on the carbon content.

SUB CODE: MM ENCL: 00

Card 2/2

L 6899-65 EWT(m)/EWP(q)/EWP(b) Pad MJW/JD/HW
ACCESSION NR: AR4044228 S/0137/64/000/006/1069/1069

98
47

SOURCE: Ref. zh. Metallurgiya, Abs. 6I395

AUTHOR: Gol'dshteyn, Ya. Ye.; Charushnikova, G. A.; Krashchenko, L. S.

TITLE: Nickel and manganese in the problem of the cold-shortness of steel

CITED SOURCE: Sb. Legirovaniye staley. Kiyev, Gostekhizdat USSR, 1963, 223-235

TOPIC TAGS: nickel, manganese, cold shortness, steel, carbon steel

TRANSLATION: Investigates the influence of Ni (to 4. 5%) on a_k and the threshold of cold shortness of carbon steel containing 0. 18, 0. 33, 0. 45 and 0. 5% C, and the influence of Mn (to 2. 8%) on the indicators in steel with 0. 21-0. 6% C. Ni-steel was processed at H_B of 240 and 340; Mn-steel-at H_B 240. The critical brittle temperature T_{xp} was the test temperature at which crystal fracture constituted 10% of the area of fracture of the sample. Preliminarily investigates the influence of

Card 1/3

L 6899-65
ACCESSION NR: AR4044228

tempering temperature on a_k of steel. After tempering at 300-350° Ni increases the a_k of steel; at higher tempering temperatures a 4.5% Ni content has a negative influence on a_k. With a small C content (0.18%) Ni promotes viscous fracture and a lowering of T_{xp}; with a C content of 0.33% and higher, Ni promotes the appearance of crystal fracture and increases T_{xp}. A lowering of a_k and an increase of T_{xp} with increasing Ni content in explained by the influence of Ni on the state of a solid solution and on the tendency of steel toward irreversible temper brittleness; the higher the C content, the lower the Mn content at which failure a_k is revealed. With a C content of 0.3%, Mn increases the a_k of steel in the hardened and tempered state. With increase of C content >0.3%, Mn renders a negative influence on a_k. At average and high tempering temperatures the Mn content >1.3% renders a negative influence for all C contents. During investigation of T_{xp} of Mn-steel with H_B 235 there is revealed a positive influence of Mn for a content ≤1.3%. With a further increase of the Mn content, T_{xp} increases. Investigates also steel containing 0.06-0.11% C and ~7% Mn. After tempering at 600° high-manganese steel, decidized by Ti, has a higher a_k to -160° than 8% Ni-steel. The influence of Ti appears in crushing of the grain and N binding.

Card 2/3

3

L 6899-65
ACCESSION NR: AR4044228

Investigation of the complex influence of Mn and other elements led to the creation of economic highly durable steels without Ni or with small Ni content (15KhGNR, 14KhZSR, 35Kh2G2SVA, and others).

18 18 18

SUB CODE: MM ENCL: 00

Card 3/3

GOLDSHTEYN, YA. YE.

AID Nr. 978-7 28 May

CHROMIUM-NICKEL STEEL WITH CERIUM (USSR)

Goldshteyn, Ya. Ye., V. I. Zel'dovich, A. I. Komissarov, and Ye. L. Korotkevich. Stal', no. 4, Apr 1963, 354-358.

S/133/63/000/004/007/011

The effects of the addition of ferrocerium containing 94% rare-earth metals on the mechanical properties of 40XH (0.37% C, 1.03% Ni, 0.57% Cr) steel were investigated at the Chelyabinsk Scientific Research Institute of Metallurgy and the Chelyabinsk Metallurgical Plant. The hardenability of steel increased only with the addition of 0.6% Fe-Ce (smaller additions did not affect the hardenability). Fe-Ce has little or no effect on austenite grain size or the rate of grain growth at high temperature. The addition of 0.10 and 0.25% Fe-Ce had a positive effect on notch toughness. With low-temperature tempering a maximum notch toughness of 5 kgm/cm^2 was obtained in

Card 1/2

AID Nr. 978-7 28 May

CHROMIUM-NICKEL STEEL [Cont'd] S/133/63/000/004/007/011

steel with 0.25% Fe-Ce; with high-temperature tempering a maximum of 22 kgm/cm^2 was obtained in steel with 0.1% Fe-Ce. Fe-Ce lowered the susceptibility of 40XH steel to temper brittleness. An addition of 0.25% Fe-Ce reduced the anisotropy of mechanical properties, 0.10% Fe-Ce had no effect, and 0.6% Fe-Ce increased the anisotropy. The addition of 0.6% Fe-Ce lowered the temperature of transition to brittle behavior by 30 to 40°C, which can be attributed to the purifying and refining effect of Fe-Ce. [WW]

Card 2/2

L 11304-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG

ACCESSION NR: AP3000485 S/0129/63/C00/005/0005/0012 58 57

AUTHOR: Gol'dshteyn, Ya. Ye.; Starikova, A. L.

TITLE: Effect of boron, molybdenum and titanium 21 on the temper brittleness of structural steel. 21

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1963, 5-12

TOPIC TAGS: boron, molybdenum, titanium, temper brittleness, structural steel

ABSTRACT: Authors studied the effect of boron, molybdenum and titanium on temper brittleness of structural steel by adding admixtures into individual fractions of molten steel of separate melts. Test melts were made in a 60-kg capacity induction furnace, and various alloys were produced by introducing admixtures into the pouring ladle or directly into the furnace. The melts were then poured into four or five ingots of varying composition. These ingots were then forged into rods and samples for heat treatment were cut out from these rods. Authors conclude that effect of boron on tendency of carbon and alloy steel to reversible temper brittleness is not clear and depends upon basic composition of the steel. Boron, introduced into finished iron or steel which is not inclined to temper brittleness, does not intensively strengthen the sensitivity of the material to a change in

Card 1/2

L 11304-63
ACCESSION NR: AP3000485

/

cooling rate after tempering. The introduction of 0.1% titanium into low-carbon steel promotes its embrittlement and increases the tendency toward reversible temper brittleness. The effect of molybdenum is of an extreme character, and increasing its content above the optimum not only reduces its positive value, but can also be the self-contained reason for embrittlement of the steel, even after it has been cooled rapidly after high temper. The optimum content of molybdenum in structural steel depends upon the carbon content. Orig. art. has: 10 figures, 2 tables.

ASSOCIATION: Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii (Chelyabinsk Scientific-research Institute for Metallurgy)

SUBMITTED: 00 DATE ACQD: 3Jun63 ENCL: 00

SUB CODE: 00 NO REF SOV: 013 OTHER: 008

kes/
Card 2/2

ACCESSION NR: AR4027681 S/0276/64/000/001/G008/G008

SOURCE: RZh. Tekhnologiya mashinostroyeniya, Abs. 1G60

AUTHOR: Gol'dshteyn, Ya. Ye.; Zel'dovich, V. I.; Shmatko, K. S.

TITLE: Peculiarities of the effect of rare earth metals on the structure and properties of structural steels

CITED SOURCE: Sb. Teoriya i praktika metallurgii. Vy*p. 5. Chelyabinsk, 1963, 123-131

TOPIC TAGS: rare earth metal, structural steel, steel metallurgy, rare metal admixture, rare metal alloy

TRANSLATION: The authors have established the possibility of immunizing steel from flake formation by increased additions of REM (rare earth metals). Such treatment simultaneously increases the resistance to brittleness and hardenability of the steel. The mechanism of long-term effects of REM additions is associated with the high absorptive ability of cerium with respect to hydrogen, and possibly with the formation of stable cerium hydrides. The introduction of 0.25% REM into

Card 1/3

ACCESSION NR: AR4027681

steel leads to the redistribution of sulfied in microvolumes of steel, as a result of which the high-melting cerium sulfides are localized in the dendrite axes and not in the interaxial spaces. The concomitant fragmentation of the dendrite crystallization is explained by the modification effect, as well as the purification of the melt of hydrogen, sulfur, and other admixtures. The maximum degree of disorganization of the dendritic crystallization is noted upon the introduction of increased portions of REM (0.6%). The purification of steels likewise promotes the removal of spot inhomogeneities. An important characteristic of steel treated with REM is the increased isotropism of its mechanical properties (yield point). The best results (the minimum anisotropy factor) are achieved upon the introduction of 0.25% ferrocerium. It was found that the optimal amount of REM additions depends on the thermal processing regime and the purpose of the steel; in the state following annealing and high-temperature tempering, an addition of 0.1% is optimal; in the state of low-temperature tempering it is 0.25% REM. The introduction of increased amounts of REM on the order of 0.4-0.6% for the elimination of flaking sensitivity of steel is permitted and is recommended only for alloyed steels to be annealed and quenched to low and medium temperatures. Such a dependence of the optimal REM addition on the conditions of subsequent thermal treatment is associated

Card 2/3

ACCESSION NR: AR4027681

with the variable solubility of cerium in α-Fe. Studies have confirmed the theoretical possibility of active extra-furnace desulfuration of steel through the addition of REM. The introduction of 0.6% ferrocerium leads to a drop in the sulfur content (in the main ingot body) by a factor of 4-5. A disadvantage of the treatment of steel with rare-earth elements with the usual technology of their introduction and deoxidation of steel is the incomplete evacuation of the treatment products into the slag and the head metal of the ingot. The successful solution of the problem of the completeness of flotation of these products will essentially determine the rates of introduction of REM into structural steel production.

DATE ACQ: 03Mar 64 SUB CODE: ML ENCL: 00

Card 3/3

S/0137/63/000/012/I064/I064

ACCESSION NR: AR4014152

SOURCE: RZh. Metallurgiya, Abs. 12I419

AUTHOR: Gol'dshteyn, Ya. Ye.; Charushnikova, G. A.

TITLE: Effect of nickel on the cold brittleness of carbon steel

CITED SOURCE: Sb. Teoriya i praktika metallurgii. Chelyabinsk, vyp. 5, 1963, 132-141

TOPIC TAGS: Nickel carbon steel, carbon steel cold brittleness

TRANSLATION: Four fractional melts were studied, the C content of each of which was constant (0.18; 0.33; 0.44, and 0.50%), with the Ni content changing from 0.1 to 4.5%. a_k was determined in specimens with H_B equal to 240 and 340 at temperatures between -120 and +20°. The effect of Ni on the properties of the steel depends on the C content and the heat treatment. When the C content is 0.18%, Ni improves the fracture and a_k of the steel. When the Ni content increases from 0.1 to 4.5%, the cold-brittleness threshold shifts toward lower temperatures

Card 1/2

ACCESSION NR: AR4014152

(-60°). The cold brittleness is enhanced in steels containing 0.33% C and 0.50% Ni. When H_B is equal to 240, the positive effect of Ni declines as early as 0.33% C and becomes negative at 0.50%. M. Ivanova.

DATE ACQ: 09Jan64 SUB CODE: ML ENCL: 00

Card 2/2

L 25320-65 EWT(m)/EWA(d)/EWP(t)/EWP(k)/EWP(b) Pf-4 IJP(c) RDH/MJW/JD

ACCESSION NR: AR5000598 S/0137/64/000/008/I064/I064

SOURCE: Ref. zh. Metallurgiya. Sv. t., Abs. 8I404 28

AUTHOR: Zaslavskiy, A. Ya.; Gol'dshteyn, Ya. Ye.; Koys, N. V.; Shenk, R. I. B

TITLE: NIPRA steel and its properties

CITED SOURCE: Sb. Teoriya i praktika metallurgii, vyp. 6. Chelyabinsk, 1963, 139-147

TOPIC TAGS: steel, machinability, metal physical property, metal mechanical property, grain size, aluminum containing alloy, titanium containing alloy, selenium containing alloy, tellurium containing alloy/ NIPRA steel 21

TRANSLATION: A new steel, brand NIPRA, alloyed with small quantities of aluminum and titanium for grain refining and selenium (tellurium) to improve machinability, has been investigated. In the opinion of the authors, the steel is suitable for a wide range of parts whose working conditions make it possible to avoid hardening of the whole

Card 1/2

L 25320-65

ACCESSION NR: AR5000598

0

piece, and will serve as a substitute for case hardening steel. Two melts of NIPRA steel with the following compositions (in %) were investigated: melt I - 0.55 carbon, 0.28 manganese, 0.24 silicon, 0.06 chromium, 0.12 nickel, 0.08 aluminum, 0.03 tellurium; melt II - 0.57 carbon, 0.30 manganese, 0.16 silicon, 0.03 chromium, 0.12 nickel, 0.07 aluminum, 0.04 tellurium. NIPRA steel has a small grain size and is stable against grain growth during heating in the interval 860-1100°. The mechanical properties of NIPRA steel are: for melt I - sigma_b 68.6-68.2 kg/mm^2, sigma_s 40.5-41.5 kg/mm^2, delta 19.0-21.0%, psi 36.0-39.0%, a_k 3.9-4.2 kgm/cm^2; for melt II, respectively, 67.6-69.2, 41.5-41.2 kg/cm^2, 19.6-21.2, 37.6-42.0%, 3.4-4.1 kgm/cm^2. V. Olenicheva.

SUB CODE: MM ENCL: 00

Card 2/2

L 11289-63 EWP(q)/EWT(m)/BDS--AFFTC/ASD--JD
ACCESSION NR: AP3002310 S/0182/63/000/006/0014/0016

53

AUTHOR: Gol'dshteyn, Ya. Ye.; Yangirova, M. Kh.

TITLE: New nickelless die steels 17

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 6, 1963, 14-16

TOPIC TAGS: hot work die steel, nickelless, vanadiumless, mechanical properties, composition, service life, fire crack resistance

ABSTRACT: A number of steels for hot-working dies have been studied in a search for a substitute for high-alloy steels containing nickel, tungsten, molybdenum, and vanadium. As a result, the 5Kh3SM (45Kh3SM) steel was developed. It contains 0.42—0.55% C, 0.3% max Mn, 0.7—1.1% Si, 2.8—3.2% Cr, 0.25—0.40% Mo, and 0.03% max each of P and S. The physicomechanical properties of the new steel (hardness, tensile strength at 600C, hardness at 450—550C, impact strength, service life) were found to be superior to those of the standard 5KhNV die steel [Cr-Ni-V steel]. In addition, the new steel was found to be more resistant to fire cracking than 5KhNV. In the former, the first cracks appeared on the average after 110 cycles (heating to 900C, followed by water-spray cooling) and in the latter, after 65 cycles. Both steels are somewhat susceptible to temper brittleness. The heat

Card 1/2

1 (2/55)

L 11289-63
ACCESSION NR: AP3002310

O

treatment of 5Kh3SM steel dies includes annealing at 900C, oil quenching, and tempering at 580—650C, depending on the required hardness (33—40 RC). The new steel is being introduced at Chelyabinsk plants and in other economic regions. Orig. art. has: 5 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 12Jul63	ENCL: 00
SUB CODE: ML	NO REF SOV: 003	OTHER: 000

Card 2/2

GOL'DSHTEYN, Ya.Ye.; YANGIROVA, M.N.

New nickel-free die steels. Kuz.-shtam. proizv. 5 no.6:14-16 Je '63.
(MIRA 16:8)

GOL'DSHTEYN, Ye.Ye.; ZHIZHAKINA, O.D.

Effect of small additions of RZM [rare-earth metals] on the structure and properties of cast steel. Lit. proizv. no.7: 24-26 Jl '63. (MIRA 17:1)

GOL'DSHTEYN, Ya.

V.[illegible] commissions for intradepartmental control. Fin. SSSR [illegible] no.6:83-84, Je '61. (MIRA 16:9)

1. Glavnyy kontroler-revizor Ministerstva stroitel'stva i stroitel'nykh materialov Moldavskoy SSR.
(Moldavia—Construction industry—Auditing and inspection)

L 62945-65 EWT(m)/EWP(w)/EPF(c)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(c)
IJP(c) JD
ACCESSION NR: AR5013144 UR/0137/65/000/007/I059/I059
41
38
B

SOURCE: Ref. zh. Metallurgiya, Abs. 7I378

AUTHOR: Gol'dshteyn, Ya. Ye.; Charushnikova, G. A.; Belikov, A. M.; Verbovetskaya, D. Ye.
44,55 44,55 44,55
44,55

TITLE: Properties and special characteristics of phase transitions of high manganese steels
CITED SOURCE: Sb. Teoriya i praktika metallurgii. Vyp. 7. Chelyabinsk, 1964, 189-199
16,55
TOPIC TAGS: manganese steel, phase transition, brittleness, solid mechanical property, nitrogen, nitride, manganese containing alloy, molybdenum containing alloy, tungsten containing alloy
B
TRANSLATION: Determinations were made of the mechanical properties and the tendency toward cold brittleness of steels containing (in %) 0.0[illegible]-0.11 carbon, 6.84-8.89, residual aluminum up to 0.13 or residual titanium up to 0.[illegible]. Investigations were also made by microscopic, X-ray structural, dilatometric, and durometric methods. With the composition adopted, a satisfactory combination of

Card 1/2

L 62945-65
ACCESSION NR: AR50[illegible]9144

3

properties (sigma$_s$ ≥ 50 kg/mm^2, a_{k-40} 9-12 kgm/cm^2) is ensured by a small grain size and a two phase structure, consisting of a thin mixture of ferrite and austenite, resistant at very low temperatures. A similar structure appears on heating up to 600-625C steels which have been previously hardened or normalized. The harmful effect of manganese on the position of the threshold of cold brittleness is due not only to the manganese itself, but also to the nitrogen introduced into the steel with the ferromanganese or the metallic manganese. It is necessary to neutralize the harmful effect of nitrogen dissolved in the steel by bonding it in stable nitrides and carbonitrides (residual aluminum or residual titanium 0.05-0.07%). Subsequent alloying with 6-9% manganese, molybdenum (up to 0.5%) or tungsten (up to 1%) aid in a further lowering of the threshold of cold brittleness (a_{k-40} 17-20 kgm/cm^2). Orig. art. has: 7 literature titles. I. Tulupova

SUB CODE: MM ENCL: 00

Card 2/2

L 40799-65 EWT(m)/EWP(w)/EWA(d)/EPR/T/EWP(t)/EWP(z)/EWP(b) Ps-4 IJP(c)
MJW/JD

ACCESSION NR: AP4048659 S/0133/64/000/011/1033/1037 42 39 B

AUTHOR: Gol'dshteyn, Ya. Ye. (Candidate of technical sciences); Vesely, A. (Engineer); Lukash, V. (Engineer); Koshan, I. (Engineer); Stoyanova-Taseva, S. V. (Engineer)

TITLE: Effect of metallurgical factors on the mechanical properties and fatigue strength of 18KhNVA steel

SOURCE: Stal', no. 11, 1964, 1033-1037

TOPIC TAGS: fatigue strength, deoxidation, microalloying, electroslag melting, ductility/ 18KhNVA steel

ABSTRACT: Deoxidizing conditions and microalloying significantly affected the fatigue strength of 18KhNVA steel. Maximum fatigue strength was attained when an increased amount of aluminum (0.8-1 kg/T) was used in the final deoxidation, without addition of calcium-silicon to the ladle; the final Al content should be 0.02 -0.05%. Such deoxidation pulverized the nonmetallic inclusions and the secondary grain and reduced its growth on heating. The plastic limit $\sigma_{0.005}$ and

Card 1/2

L 40799-65
ACCESSION NR: AP4048659

3

the fatigue limit σ_{-1} of the 18KhNVA steel also depended on the low temperature
tempering conditions after hardening. Increasing the temper temperature from
180 to 250C increased the value of $\sigma_{0.005}$ by 5-20 kg/mm^2, and of σ_{-1} by 3-8
kg/mm^2, depending on the aging and purity of the steel. Homogenization at
1120-1200C had no effect on these properties. Electroslag remelting increased
the plastic and ductile properties of the steel and lowered the threshold of cold
brittleness by 20-40C and the coefficient of anisotorpy. Dueto the higher chemi-
cal and structural homogeneity and the low contamination with nonmetallic inclu-
sions in the electroslag melted steel, fatigue strengths of the order of 60-74
kg/mm^2 can be attained by hardening in oil and tempering at 225-250C. "D. G.
Zhukov participated in conducting.....the melting tests." Orig. art. has: 4
figures and 7 tables.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NR REF SOV: 002 OTHER: 006

Card 2/2

L [illegible] [illegible](t)/ETI/EWP(k) IJP(c) [illegible]

ACC NR: AP6031224 (A) SOURCE CODE: UR/0133/66/000/009/0837/0841

AUTHOR: Gol'dshteyn, Ya. Ye. (Candidate of technical sciences); Bakmovskaya, M. V. (Engineer); Kapel'nitskiy, V. G. (Engineer); Keys, N. V. (Engineer)

ORG: Chelyabinsk Institute of Metallurgy (Chelyabinskiy n.-i. institut metallurgii); (Chelyabinsk Metallurgical Plant (Chelyabinskiy metallurgicheskiy zavod)

TITLE: Structure and properties of variously melted structural steel

SOURCE: Stal', no. 9, 1966, 837-841

TOPIC TAGS: steel structure, metal property, vacuum melting, induction melting, structural steel, structural steel melting, structural steel property, electroslag melting, vacuum arc melting, vacuum induction melting/18Kh2N4VA structural steel, 40KhNMA structural steel, 35Kh2GSMA structural steel

ABSTRACT: A comparative study has been conducted of the structure and properties of 18Kh2N4VA (A), 40KhNMA (B), and 35Kh2GSMA (C) structural steels melted by the following processes (weight of ingots in kg [illegible] [illegible] [illegible]), [illegible], vacuum induction [illegible], electroslag + vacuum arc [illegible], and 1000], vacuum arc [200], and vacuum induction + vacuum arc [450]. It was found that although none of the melting processes used affected significantly the strength of steels, all of them more or less improved the notch toughness at room temperature, reduced the susceptibility to temper brittleness (see Fig. [illegible]) and lowered the temperature of transition to brittle behavior. For instance, the latter temperature of A, B and C steels melted by one of the combined processes dropped from 30—35, 30 and 30C (conventional

UDC: 669.[illegible]-194

Card 1/3

L 04982-67

ACC NR: AP6031224

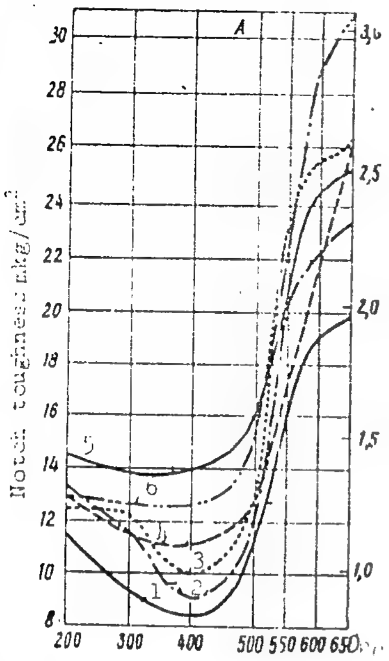

Fig. 1. Notch toughness of 18Kh2N4VA steel versus tempering temperature

1 - Conventional arc; 2 - electroslag; 3 - electroslag + vacuum arc; 4 - vacuum arc; 5 - vacuum induction; 6 - vacuum induction + vacuum arc.

Card 2/3

L 04982-67
ACC NR: AP6031224

arc melting) to 70—75, 115—120 and 60—70%, respectively. The combined melting processes also reduce the anisotropy of mechanical properties. However, the degree of effect depends on the final heat treatment and the carbon content of the steels. Orig. art. has: 6 figures and 2 tables. [JP]

SUB CODE: 11, 13/ SUBM DATE: none

Electroslag melting

Card 3/3

GOL'DSHTEYN, Ye. G.

USSR

2 - F/W

Gol'dštein, E. G. On best approximations of harmonic functions by harmonic polynomials. Dokl. Akad. Nauk SSSR (N.S.) 101, 5-8 (1955). (Russian)

Let $f(P)$ be a continuous function defined in a closed set F of three-dimensional Euclidean space, harmonic at all interior points of F. Put

$$E_n(f) = \inf_{Q} \sup_{P \in F} |f(P) - Q(P)|,$$

where $Q(P)$ runs through all harmonic polynomials of degree $\leq n$ in the cartesian coordinates of P. The author gives upper bounds for $E_n(f)$ under rather general assumptions about F. A typical result which is mentioned as a corollary of his theorems is the following: Let F be the closure of a bounded domain whose boundary has a continuously turning tangent plane. Let $f(P)$ be continuous with modulus of continuity $\omega(\delta)$. Given $\epsilon > 0$ there is a constant $c(\epsilon)$ such that $E_n(f) \leq c(\epsilon)\omega(n^{-1+\epsilon})$. The method of proof utilizes pole shifts, following an idea due to M. Keldyš [see S. N. Mergelyan, Uspehi Mat. Nauk (N.S.) 8, no. 4(56), 3-63 (1953); MR 15, 411]. *W. H. J. Fuchs* (Ithaca, N. Y.).

GOL'SHTEYN, YE. G. and YUDIN, D. B.

"Problems and Methods of Linear Programming" (based on materials of a book now in press) (18 December 1959)

report delivered at a seminar on cybernetics, Moscow State University

So: Problemy kibernetiki, Issue 5, 1961, pp. 289-294

L 44411-66 EWT(1)/EEC(k)-2/T/EWP(k) IJP(c) WG

ACC NR: AR6023284 SOURCE CODE: UR/0058/66/000/003/H006/H006

AUTHOR: Gol'dshteyn, Ye. L.

66

B

ORG: none

TITLE: Self-excitation theory of optical quantum generators

SOURCE: Ref zh. Fizika, Abs. 3Zh40

REF SOURCE: Tr. Uchebn. in-tov svyazi. M-vo svyazi SSSR, vyp. 26, 1965, 23-30

TOPIC TAGS: quantum generator, self excitation, resonator, light reflection coefficient, optical equipment, optical quantum generator

ABSTRACT: Self-excitation conditions of a optical quantum generator with plane mirrors are investigated. A threshold of generation is determined, taking into consideration the finite Q-factor of the resonator. It is shown that the generation by mirrors is in a straight line with reasonable dimensions of the resonator and light reflection coefficient. [Translation of abstract] [NT]

SUB CODE: 20/

Card 1/1

~~GOL'DSHTEYN, Ye. M.~~

GOL'DSHTEYN, E.M.

Hydrolysis of the polyanhydrides of adipic and sebacic acids. M. S. Dudkin and E. M. Gol'dshtein (I. V. Stalin Technol. Inst., Odessa). [illegible] (1950).—Refluxing 20 g. adipic acid with 80 ml. Ac_2O 6 hrs. gave adipic polyanhydride, m. 71°; similarly was prepd. sebacic polyanhydride, m. 78°. The mol. wts. were resp. 4040 and 5240. These hydrolyze slowly in air and are gradually attacked in aq. suspension. The reaction is accelerated by heating and by HO ions. In 0.02N KOH sebacic polyanhydride shows a rate const. of hydrolysis at 25° of 0.0[illegible], at 42° 0.0115, with activation energy of 9070 cal./mole, and first order kinetics. Adipic polyanhydride hydrolyzes more rapidly initially than the sebacic analog. G. M. K.

KABALKIN, V.A.; GOL'DSHTEYN, Ye.N.

Screw-rotary snowplows used in Bavaria. Stroi. i dor. mashinostr. 3 no.1:39-40 Ja '58. (MIRA 11:1)

(Bavaria--Snowplows)

GOL'DSHTEYN, Yu., inzhener.

Work with chauffeurs in a probationary status at a motor pool. Avt.transp. 32 no.1:31-32 Ja '54. (MLRA 7:8)

1. 8-ya avtobaza Upravleniya grusovogo avtotransporta Mosgorispolkoma.

(Automobile drivers)

H
GOL'DSTEYN, Yu.

Dump trailer made of a reequipped U2-AP-3 side rack trailer.
Avt.transp.34 no.2:18-20 F '56. (MLRA 9:7)

1.Glavnyy inzhener 8-y avtobazy Glavnogo upravleniya gruzovogo avtotransporta Mosgorispolkoma.
(Automobiles--Trailers)

L 29562-66

ACC NR: AR60122

SOURCE CODE: UR/0274/65/000/010/A009/A00

AUTHOR: Gol'dshteyn, Yu. A.

TITLE: Signal-to-noise ratio at the output of a crosscorrelation detector 5

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz', Abs. 10A61

REF SOURCE: Tr. Nauchno-tekhn. konferentsii Leningr. elektrotekhn. in-ta svyazi, vyp. 1, 1964, 77-81

TOPIC TAGS: signal detector, crosscorrelation detector, signal noise separation

ABSTRACT: Quantitative relations are developed for estimating the required duration of a noise-like signal to bring about a specified improvement in the signal-to-noise ratio by a crosscorrelation detector. It is proven that the signal-to-noise ratio at the output of a crosscorrelation detector can be expressed in terms of the input signal-to-noise ratio as: $SNR_{out} = \frac{P_s}{P_n} \cdot \frac{1}{16F(x)}$. The advantage of the crosscorrelation detector is $1/16\,F(x)$ where

$$F(x)=\frac{\cos x}{x^2}-\frac{\mathrm{Si}\,x}{x}-\frac{1}{x^2}+\frac{1}{x^2}\,[\mathrm{Ci}\,x-\ln x-C];$$

x is a coefficient equal to a double product of the signal duration T and its band $\Delta\omega$;

Card 1/2

UDC: 621.391.17

L 29582-66

ACC NR: AR6012295

C is the Euler constant. For high values of $x > 10$--20, the output signal-to-noise ratio is $P_s T/2b^2$ and depends not on the noise band but rather on its spectral density b^2. This conclusion agrees with the general statement of the theory of potential noise rejection that the latter is determined by the signal energy to noise energy ratio. Two figures. Bibliography of 4 titles. L. S. [Translation of abstract]

SUB CODE: 17, 09

Card 2/2

L 29591-66 EWT(d)
ACC NR: AR6012292 SOURCE CODE: UR/0274/65/000/010/A007/A007

AUTHOR: Gol'dshteyn, Yu. A.

TITLE: Noise rejection in a diversity reception system for binary signals in the presence of fading

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz', Abs. 10A47

REF SOURCE: Tr. uchebn. in-tov svyazi. M-vo svyazi SSSR, vyp. 23, 1964, 12-17

TOPIC TAGS: diversity reception, radio reception, signal noise separation

ABSTRACT: The noise rejection is analyzed for the case of diversity reception of binary signals when the fading obeys this law: $W(\mu)=\frac{A}{\mu_0}\left(\frac{\mu}{\mu_0}\right)^{n-1}\exp\left(-B\frac{\mu^2}{\mu_0^2}\right)$ $(\mu>0)$, where A and B are the constants determined by normalization conditions, η is the parameter taking on values 4, 6, and 8; μ_0 is the mean square of the transmission factor. The problem is generalized by assuming that $\eta = 2(1,2,\ldots, n)$. For the above distribution, a formula is developed for the probability of error in binary-signal reception, when an optimal coherent addition takes place in a channel having noncorrelated fadings. The reception of signals of this form

Card 1/2 UDC: 621.391.153

L 29591-66

ACC NR: AR6012292

$$\left.\begin{aligned} z_1(t) &= a\sum_{i=1}^{k}\cos(\omega_i t+\varphi_i) \\ z_2(t) &= -z_1(t) \end{aligned}\right\}\quad 0<t<T,$$

is considered as an example; the signals are the sum total of k identical frequency-diversity signals. Bibliography of 5 titles. L. S. [Translation of abstract]

SUB CODE: 17, 09

Card 2/2

L 31926-66 EWT(d)/FSS-2

ACC NR: AR6016245 SOURCE CODE: UR/0058/65/000/011/H016/H016

50

AUTHOR: Gol'dshteyn, Yu. A.

TITLE: The noiseproof feature of incoherent spaced reception with signal-amplitude distribution according to the "transformed Chi square" law

SOURCE: Ref. zh. Fizika, Abs. 11Zh120

REF SOURCE: Tr. uchebn. in-tov svyazi SSSR, vyp. 24, 1965, 25-32

TOPIC TAGS: signal reception, signal noise separation, Chi square distribution

ABSTRACT: The structure of an optimal incoherent receiver 4 was defined for a channel whose transmission factor satisfies the "transformed Chi square" distribution. Pertinent relationships were obtained for calculating the error probability for signals which are orthogonal in the amplification sense. [Translation of abstract]. [KP]

SUB CODE: 17, 09/ SUBM DATE: none

Card 1/1

L 33575-[illegible]

ACC NR: [illegible] SOURCE CODE: UR/0058/65/000/011/E023/E023

[illegible]

[illegible] intermittent [illegible]

[illegible] the error [illegible] active cause [illegible] reaction in a [illegible] resulting [illegible] estimated. [Translation of [illegible]

SUB CODE: 17/

Card 1/1

LYUTER, A.V.; VOL'POVA, Ye.G.; GOL'DSHTEYN, Yu.A.

Efficient methods for manufacturing alkylarylsulfonate washing in Groznyi. Trudy GrozNII no.4:218-223 '59. (MIRA 12:9)
(Groznyi--Cleaning compounds) (Sulfonol)

[illegible]

[illegible]

L 6513-66 EWT(d)

ACC NR: AP5025649 SOURCE CODE: UR/0106/65/000/010/0071/0074

AUTHOR: Gol'dshteyn, Yu. A.

ORG: none

TITLE: Noise rejection in receiving discrete information via a channel whose propagation factor obeys the m-distribution law

SOURCE: Elektrosvyaz', no. 10, 1965, 71-74

TOPIC TAGS: signal noise separation, data transmission

ABSTRACT: Based on the M. Nakagami results ("Statistical Methods in Radio Wave Propagation", NY, 1960), the structure of an optimal noncoherent receiver of multiposition signals is theoretically determined; fast smooth fading and additive normal noise are assumed. These findings are reported: (1) Replacing the 2-position system by a 6-position (or 32-position) one may bring about a gain of 2--3 db (or 4--6 db); (2) Under the worst conditions, $m = 1/2$, the channel traffic capacity may drop to one-half of that of the ideal channel. A formula and a block diagram determining the optimal receiver structure are supplied, as is a formula for computing the probability of error in a multiposition system having active spacings and orthogonal signals. Orig. art. has: 2 figures and 25 formulas.

Card 1/2 UDC: 621.396.626

0901 1799

L 6513-66
ACC NR: AP5025649

SUB CODE: DP, EC/ SUBM DATE: 16Oct64/ ORIG REF: 004/ OTH REF: 001

nw
Card 2/2

[illegible]

ACC NR: AR6019064 SOURCE CODE: UR/0274/66/000/001/A011/A011

AUTHOR: Gol'dshteyn, Yu. A.

TITLE: The noiseproof feature of noncoherent spaced reception with amplitude distribution of the received signal, according to the law of "χ^2 transformation"

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz', Abs. 1A59

REF SOURCE: Tr. uchebn. in-tov svyazi. M-vo svyazi SSSR, vyp. 24, 1965, 25-32

TOPIC TAGS: signal noise separation, signal reception

TRANSLATION: The structure of an optimum noncoherent receiver is determined where attenuation obeys the distribution law of "χ^2 transformation", previously presented on the basis of experimental research on short wave transmission lines. The noiseproof reception calculation is made, assuming that the noise fluctuation is normal. It is stated that the optimum receiver in question can be based on a quadrant circuit or matching filters. A variant of an optimum receiver based on matching filters is demonstrated. It is stated that for a system with an active interval, the optimum scheme of noncoherent spaced pickup, is practically independent of the nature of the attenuation. The error probability of an n-position system with an active interval and signals which are strictly orthogonal in the quadrant multiplier circuit is established. The analysis shows that the noncoherent spaced reception makes possible an energy gain,

Card 1/2 UDC: 621.391.18

L 09995-67

ACC NR: AR6019064

of 15.5±2.7 db with a double pickup and 23±4.3 db with triple pickup, compared with the single pickup. 6 references, 1 figure. Yu. S.

SUB CODE: 09

ACC NR: [illegible]

SOURCE CODE: UR/0274/65/000/012/A066/[illegible]

AUTHOR: Gol'[illegible]

TITLE: Inter[illegible] chopped signal systems

SOURCE: Ref. zh. [illegible] tekhnika i elektrosvyaz', Abs. 12A50

REF SOURCE: Tr. [illegible]n. in-tov svyazi, vyp. 25, 1965, 61-66

TOPIC TAGS: interference reduction, radio niose, radio transmission

ABSTRACT: A calculation of the probability of error in binary chopped signal systems with active load is considered. The noise is assumed to be jitter, and the distribution law for the channel transmission coefficient μ is approximated by the m-distribution

$$W(\mu) = \frac{2m^m\mu^{2m-1}}{\Gamma(m)(2\mu_0^2)^m}\exp\left(-\frac{m\mu^2}{2\mu_0^2}\right),$$

where $2\mu_0^2$ is the mean square of the channel transmission coefficient. The signals are assumed to be equally probable and orthogonal in the strong sense. A study of the extremum of the expression for the average transmission rate shows that there exists an optimal duration of signal element T_{opt} for which the maximum rate of information transmission is provided. The probability of incorrect reception is then

Card 1/2

UDC: 621.391.17

L 41293

ACC NR: AR6014596

$$\frac{2^{m-1} m^m \Gamma\left[m, (2m+n^2)\frac{\beta}{2}\right]}{(2m+h^2)^m \Gamma(m, m\beta)}.$$

and depends on the signal element energy and on the specific noise power h. It also depends on some coefficient β which varies from 0 to 1.35 with a change in m from ∞ to 0.5. The gain in transmission rate due to the introduction of chopping varies in the range 1—10^6 for the same values of m. 5 tables, bitliography of 6 citations. L. S. [Translation of abstract]

SUB CODE: 17

Card 2/2

Gol'dshteyn Zh. I.

PHASE I BOOK EXPLOITATION SOV/4592

Moscow. Gosudarstvennyy nauchno-issledovatel'skiy institut plasticheskikh mass

Issledovaniya v oblasti termoreaktivnykh plastmass (Investigations in the Field of Thermosetting Plastics) Moscow, Goskhimizdat, 1959. [illegible] p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agencies: Gosudarstvennyy komitet Soveta Ministrov SSSR po khimii; Gosudarstvennyy nauchno-issledovatel'skiy institut plasticheskikh mass.

Ed.: V. M. Yur'yev; Tech. Ed.: Ye. G. Shpak.

PURPOSE: This book is intended for chemical engineers and technicians, and research chemists interested in thermosetting plastics.

COVERAGE: The collection contains 11 articles which reflect some Soviet efforts and achievements in synthesizing plastics with special physicochemical properties, i.e., water-, acid-, heat-, and arc-resistance. No personalities are mentioned. References given are mainly Soviet and English, with several French and German and accompany the articles.

Petrov, G. S. (Deceased), S. M. Dubits, and G. S. Dzevinskiy. Phenol-Formaldehyde Resins Combined With Rubber and Molding Materials From This Combination 10

[illegible] Water- and Acid-Resistant and Electric Insulating Phenolite and "Dekorrosit" [Similar to Phenolite] Plastics 15

Petrov, G. S. (Deceased), and E. Ya. Fiskina. Thermosetting Resins From Furyl Alcohol and Their Use in Industry 31

Izyumov, B. D., and I. P. Panfilova. Heat- and Arc-Resistant Organosilicon Molding Materials 45

Izyumov, B. D., V. I. Pakhomov, and Zh. I. Gol'dshteyn. Heat-Resistant Organosilicon Glues 56

Stal'nova, M. A., and O. S. Nikolina. A New Heat-Resistant Glue 65

Petrov, G. S. (Deceased), and V. E. Gorbunov. The Use of Sulfite Alkalis in Producing Synthetic Resins and Plastics [illegible]

Gorbunov, V. E., and A. G. Magibina. Synthetic Resins for Producing Decorative Laminated Plastics 79

Kosteva, D. K. Resins and Molding Materials From Oxazolidine Derivatives 87

Izyumov, B. D., V. P. Pakhomov, and V. M. Sel'perina. Electric Insulating and Structural Glass Textolite From Organosilicon Resins 96

AVAILABLE: Library of Congress (TP986.[illegible])

JA/rn/fal
1-5-61

Card 3/3

S/081/61/000/014/028/030
B105/B202

AUTHORS: Izyumov B. D., Pakhomov V. I., Gol'dshteyn Zh. I.

TITLE: Water soluble hydrophobic organosilicon liquids

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 14, 1961, 619, abstract 14Л95 (Vestn. tekhn. i ekon. inform. N.-i. in-t tekhn.-ekon. issled. Gos. kom-ta Sov. Min. SSSR po khimii, 1959, No. 5 (17), 45-48)

TEXT: The authors discuss the properties and the fields of application of water-soluble organosilicon polymers which are used to waterproof textile products, paper, carton, leather, and building materials. Materials are waterproofed by means of aqueous solutions of the liquid ГМС-9 (GMS-9) in the presence of catalysts (NH_3, CH_3COOH, H_2O_2, triethylamine, alum etc.) and by subsequent heat treatment (5-10 min at 130-150°C) for the fixation of the foil. The liquids MSG-9 and ES-9 are aqueous solutions of sodium methyl and ethyl siliconate. They are applied by a brush, a spray or by immersion, and subsequently dried on air. The authors give data on the

Card 1/2

Water soluble hydrophobic ..

S/081/61/000/014/028/030
B105/B202

effectiveness of the treatment of a series of materials by the liquids mentioned. [Abstracter's note: Complete translation]

Card 2/2

37777

15 8170

S/661/61/000/006/072/081
D247/D302

AUTHORS: Pakhomov, V. I., Izyumov, B. D. and Gol'dshteyn, Zh. I.

TITLE: Thermostable silico-organic glues

SOURCE: Khimiya i prakticheskoye primeneniye kremneorganicheskikh soyedineniy; trudy konferentsii, no. 6: Doklady, diskussii, resheniye. II Vses. konfer. po khimii i prakt. prim. kremneorg. soyed., Len. 1958. Leningrad, Izd-vo AN SSSR, 1961, 306-316

TEXT: Two methods are used for obtaining glues with both high thermal stability and good adhesion. The first is the modification of polysilicone resins by other polymers containing strong polar groups. The second is by the introduction of polar groups into the organic radicals in the polysilicones. A series of glues with different modifications were examined for adhesion and thermostability and the constitution of the glues and their performance was noted. Their uses and methods of application were also given. Various si-

Card 1/2

S/661/61/000/006/072/081
D247/D302

Thermostable silico-organic glues

lico-organic glues tested were found to last for 100 hours at 200 - 350°C, 10 hours at 300 - 350°C and 10 - 20 hours at 400°C. There are 9 figures and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: R. R. McGregor, Silicones and their uses, New York, (1954).

ASSOCIATION: Nauchno-issledovatel'skiy institut plastmass, Moskva (Scientific Research Institute of Plastics, Moscow)

Card 2/2

PHASE I BOOK EXPLOITATION SOV/6454

Gol'dshteyn, Mikhail Izrailevich

Primeneniye radioaktivnykh izotopov dlya izucheniya stal'nogo slitka (Use of Radioactive Isotopes in the Study of Steel Ingots) Moscow, Metallurgizdat, 1963. 183 p. 2400 copies printed.

Reviewer; V. F. Isupov; Ed.: A. A. Romanov; Ed. of Publishing House: M. M. Bur'kov; Tech. Ed.: N. T. Mal'kova.

PURPOSE: This book is intended for engineering personnel of plant laboratories, shops, and scientific research institutes.

COVERAGE: The book reviews the problems connected with the application of a new method of studying steel ingots with the aid of radioactive isotopes. General information on radioactive isotopes in given, and the principles of their application as tagged atoms are described along with

Card 1/6

methods used for studying the steel ingot. The most important scientific Soviet and non-Soviet achievements are outlined, and data are presented which the author obtained with the aid of radioactive isotopes in studying the structure of steel ingot, the mechanism of its crystallization, zonal and dendritic segregation, and the sources of ingot contamination with nonmetallic inclusions. Discussed also are the results of investigations conducted with radioactive isotopes of defects of steel products (lamination, flaky fracture, banding, etc.) attributed to the quality of the ingot. The author thanks I. Ye. Bolotov, A. A. Popov, P. V. Sklyuyev, G. D. Susloparov, A. B. Fedorov, S. G. Guterman, V. F. Isupov, and A. A. Romanov for their assistance. There are 157 references, mostly Soviet.

TABLE OF CONTENTS:

Foreword 5

ACCESSION NR: AP4017370 S/0126/64/017/002/0308/0310

AUTHORS: Guterman, S. G. (Deceased); Col'dshteyn, M. I.

TITLE: Solubility of vanadium in austenite

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 2, 1964, 308-310

TOPIC TAGS: vanadium, austenite, vanadium solubility in austenite, Mn effect on solubility, Cr effect on solubility, Mn, Cr

ABSTRACT: The article presents the results obtained in the study of vanadium solubility in various construction steels (with respect to the austenization temperature and to the initial vanadium content in metals). The steels were melted in a high-frequency oven and cast into 8-kg ingots. These were forged into 14 x 14 mm bars and annealed. The quantity of vanadium was determined by chemical analysis of carbide residue. Samples for the carbide analysis were heated to 900, 1100, 1200, and 1250C, and were held at each temperature for 30 minutes before being quenched in water. The results showed that V solubility in austenite increased substantially with the increase of Mn and of Cr at all temperatures, and that Cr had a stronger effect than Mn. The progress of carbide solution during heating depended

Card 1/2

ACCESSION NR: AP4017370

on the strength of the interatomic bonds between metal and C. The positive effect of Mn on the solution of V in austenite is explained by the weakening of bonds between the vanadium and the carbon atoms in carbides (this may also be true for the Cr effect). Because Cr is more intense in forming the carbides, its effect on the weakening of bonds is much greater than that of Mn. The intensity of the solubility was found to depend also on the initial V concentration in steel. At constant temperature the solubility increased with the increase in V content. This investigation confirmed A. A. Popov's assertion to the effect that the increase in in the content of the carbide-forming alloying element (at a given carbon concentration and at constant temperature) results in austenite with a higher content of the alloying element. Orig. art. has: 2 figures.

ASSOCIATION: Ural'skiy institut cherny*kh metallov (Ural Institute of Ferrous Metallurgy)

SUBMITTED: 12Jul63 DATE ACQ: 18Mar64 ENCL: 00

SUB CODE: ML NO REF SOV: 002 OTHER: 001

Card 2/2

GOL'DSHTEYN, M.I.

Introducing hard-alloy cutting tools. Bum. i der. prom. no.3:42-44
Jl-S '64.
(MIRA 17:11)

[illegible], [illegible]; GOL'DSHTEYN, M. I.

[illegible] for the perforation of a gummed [illegible]. Bum. i der. prom. [illegible] '58 [illegible]
(MIRA [illegible])

GOL'DSHTEYN, [illegible]

Use of radioisotopes in medicine according to materials of the X-ray and Radiological Department of the Kazan Medical Institute. Nauch. trudy Kaz. gos. med. inst. [illegible]

[illegible] 13:9)

1. Kafedra rentgenologii i radiologii (zav. - prof. [illegible] Gol'dshteyn.) Kazanskogo [illegible]

L 8270-66 EWT(1)/EWA(j)/EWT(m)/EWP(j)/EWA(b)-2 RO/RM

ACC NR: AP5027480 SOURCE CODE: UR/0219/65/060/010/0068/0069

AUTHOR: Gol'dshteyn, M. I.; 5 Berezovskiy, B. S. 55

45
B
55

ORG: Roentgeno-Radiology Department of the Kazanskiy Medical Institute (Kafedra rentgeno-radiologii Kazanskogo meditsinskogo instituta)

TITLE: Protective action 14 of organophosphorous 1 nibufin in albino mice X-irradiated with a lethal dose

SOURCE: Byulleten' eksperimental'noy biologii i meditsiny, v. 60, no. 10, 1965, 68-69

TOPIC TAGS: experiment animal, nervous system drug, 55 enzyme, organic phosphorus compound, radioprotective agent, phosphinic acid

ABSTRACT: The radioprotective action of nibufin (para-nitrophenyl ether of dibutylphosphinic acid), an active inhibitor of cholinesterase 6 activity, was investigated in two series of experiments on albino mice. In the first series, experimental animals were administered nibufin (1:3000 solution) subcutaneously in a 0.2 ml/100 g dose 10 to 15 min prior to X-irradiation (RUM-3 unit, 180 kv, 10 ma, 1 Cu+Al filters, 60 cm focal length, dose rate not given) with an 800 r dose. In the second series experimental animals were administered nibufin under the same conditions prior to irradiation and were administered a repeated dose

Card 1/2

UDC: 617-001.26-085.739.16-092.9

L 8270-66

ACC NR: AP5027480

on the 3rd day following irradiation. Radioprotective action of nibufin was determined by the mortality rates for experimental animals compared to controls on the 3rd and 6th days of the postradiation period. Results show that all experimental and control animals died within a 14 day period, with autopsies disclosing hemorrhages of the intestinal tract, lungs, heart and spleen and also degenerative changes in the liver. In the first experimental series, 12.2% of the animals died by the 3rd day and 53% died by the 6th day. In the second experimental series, 36.1% of the animals died by the 6th day. The mortality rates for control animals show that 12.2% died by the 3rd day and 53% died by the 6th day. Thus, nibufin displays a certain radioprotective action by delaying the onset of death during the first week, but does not actually reduce the general mortlity rate. Orig. art. has: None.

SUB CODE: LS/ SUBM DATE: 14Mar64/ ORIG REF: 004/ OTH REF: 002

Card 2/2

GOL'DSHTEYN, M.I.; PANFILOVA, L.M.; SUSLOPAROV, G.D.

Investigating the nature of the carbide phase during the quenching of manganese-vanadium and chromium-vanadium structural steels. Fiz. met. i metalloved. 19 no.6:870-875 Je '65. (MIRA 18:7)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov.

VOLODARSKIY, B.Ya.; FLOROV, R.S.; GRIN', A.V.; GOL'DSHTEYN, M.I.

Crane beams from 15GF steel. Prom. stroi. 42 no.8:41-43 '65.
(MIRA 18:9)

ACC NR: AP6035949 (N) SOURCE CODE: UR/0129/66/000/010/0022/0026

AUTHOR: Panfilova, L. M.; Gol'dshteyn, M. I.

ORG: Ural Scientific Research Institute of Ferrous Metals (Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov)

TITLE: Strengthening of hardenable structural steels by small additions of nitrogen, vanadium and aluminum

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 10, 1966, 22-26 and insert facing p. 33

TOPIC TAGS: structural steel, chromium steel, manganese steel, nitrogen containing steel, vanadium containing steel, aluminum containing steel, age hardenable steel/ 30Kh2 steel, 30G2 steel

ABSTRACT: Strengthening of 30Kh2 chromium steel and 30G2 manganese steel by mirco-alloying with 0.031—0.036% nitrogen, 0.05—0.09% vanadium and 0.04—0.31% aluminum has been investigated. The specimens were annealed at 900C (chromium steels) or 1000C (manganese steels), water quenched, and tempered at 400, 550, and 650C. Both aluminum and vanadium in combination with nitrogen were found to increase the steel strength. Nitrogen and vanadium or 0.05—0.25% aluminum increased the strength of chromium steel by 25 kg/mm^2. Alloying of 30G2 steel with nitrogen and vanadium increased the strength by 30 kg/mm^2 and alloying with nitrogen, vanadium, and 0.05% aluminum

Card 1/2 UDC: 669.14.29:669.292'71

ACC NR: AP6035949

increased the strength by 20 kg/mm^2. Alloying with nitride-forming elements slightly decreases the elongation and reduction of area. Alloying the nitrogen- and vanadium-containing steels with aluminum somewhat decreases their strength but increases their notch toughness. The introduction in proper proportions of small quantities of nitrogen, vanadium, and aluminum makes it possible to obtain satisfactory combinations of strength and ductility as a result of the precipitation of finely dispersed nitrides. The indicated elements increase the hardenability of both steels. Orig. art. has: 3 figures and 4 tables.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 001

Card 2/2

ACC NR: AP7000659 (A) SOURCE CODE: UR/0126/66/0[illegible]005/0766/0771

AUTHORS: Panfilova, L. M.; Gol'dshteyn, M. I.; Susloparov, G. L.; Chizhova, S. N.

ORG: Ural NII of Ferrous Metals (Ural'skiy NII chernykh metallov)

TITLE: Investigation of processes of dispersion hardening of steel caused by precipitation of nitride phases

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 5, 1966, 766-771

TOPIC TAGS: alloy steel, nitrogen, vanadium, chromium, aluminum / 30Kh2 steel, 30Kh2A steel, 30Kh2AF steel, 30Kh2AYu steel, 30Kh2AYuF steel

ABSTRACT: A study of the nitride phases precipitated during quenching of steel 30Kh2 containing additions of nitrogen, vanadium, and aluminum was carried out. The study supplements the results of L. M. Panfilova and M. I. Gol'dshteyn (sb. Primeneniye vanadiya v chernoy metallurgii, Trudy UralNIICHM, Sverdlovsk, 1966, str. 231). The specimens were prepared in an induction furnace of 1[illegible]0-kg capacity. Chemical analysis of the specimens was carried out after the method of [illegible] and A. F. Platonova (Zavodskaya laboratoriya, 195[illegible], no. 7, 28). The results are presented in graphs and tables (see Fig. 1). The strength limit of the specimens as a function of the quenching temperature was determined, and the results are tabulated. Photographs of the microstructure of specimens are presented. It was found that additions of vanadium and aluminum to steel 30Kh2 alloyed with nitrogen increase the strength

Card 1/3 UDC: 669.15-194:539.4

ACC NR: AP7000659

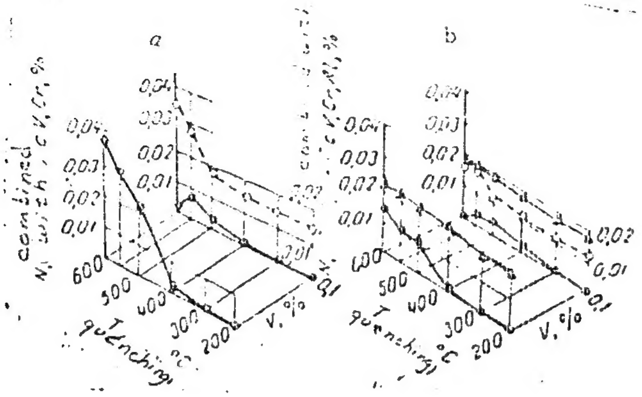

Fig. 1.

Change in the nitrogen content combined with chromium, vanadium, and aluminum during the quenching process of chromium steels: (a) steel 30Kh2A and 30Kh2AF, open circles - V(CN), shaded circles CrN; (b) steels 30Kh2AYu and 30Kh2AYuF, open circles - V(CN), shaded circles - CrN, triangles - AlN

Card 2/3

ACC NR: AP7000659

limit of the steel by 28%. It is concluded that the presence of vanadium and aluminum causes a finely dispersed precipitate of vanadium nitride in the steel. Orig. art. has: 2 tables and 3 graphs.

SUB CODE: 11/ SUBM DATE: 26Mar66/ ORIG REF: 003/ OTH REF: 001

Card 3/3

ACC NR: AP70[illegible] (N) SOURCE CODE: UR/0126/66/022/006/0938/0941

AUTHOR: Blyum, E. E.; Grin', A. V.; Gol'dshteyn, M. I.; Luchinskaya, E. P.

ORG: Ural Scientific Research Institute of Ferrous Metals (Ural'skiy NII chernykh metallov)

TITLE: Investigation of the hardening of low-alloy steel by vanadium nitrides

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 6, 1966, 938-941

metallurgic low alloy steel, mechanical property, tensile test,

TOPIC TAGS: ~~tensile~~ testing machine, electron microscope, manganese steel, vanadium, metal hardening / 15G2 manganese steel, 15G2AF manganese steel, IM-4R ~~tensile~~ metallurgic testing machine, UEMV-100 electron microscope

ABSTRACT: The nature of the hardening of low-alloy manganese steels 15G2 and 15G2AF (0.17% C, 1.75% Mn, 0.20% Si, 0.038% N, 0.02% Al, 0.040% S, 0.020% P) treated with nitrogen and vanadium (0.01, 0.04, 0.10, 0.19, 0.23, 0.30%) is investigated and the dependence of its mechanical properties on normalizing temperature and V content is established. Melts of the steels were produced by using low-carbon steel as the charge and adding to it, in the furnace, nitrided electrolytic Mn containing 2.5% N. Six 10-kg ingots, to each of which a different amount of ferrovanadium was added, were obtained from each melt. The ingots were cut into

Card 1/3 UDC: 669.15:539.

ACC NR: AP7002745

rods measuring 14x14 mm and subjected to recrystallization annealing at 950°C. Mechanical properties were determined after normalizing from various temperatures within the range of 920-1150° C. Tensile tests of specimens of 6 mm diameter were carried out in an IM-4R machine. Impact strength was investigated at temperatures of from +20 to -60°C. The specimens were also electronmicroscopically examined with the aid of an UEMV-100 microscope and the phase composition of the isolated particles trapped by the carbon replica was determined with the aid of electron diffraction patterns. Thermokinetic diagrams were plotted to elucidate the effect of V and N on the kinetics of austenite decomposition, this decomposition itself being investigated by the dilatometric method at 950°C. Findings: the hardness and ultimate strength and yield point of all the investigated steels increase with increase in normalizing temperature, and this increase is the higher the greater the V content of the steel is (up to 0.10-0.20% V). As the normalizing temperature increases, the amount of decomposition products increases, this being due to the dissolution of vanadium nitrides in the austenite and increase in its stability on cooling. Treatment of 15G2 steel with N and V markedly increases the stability of supercooled austenite and reduces its transformation temperature both in the pearlitic and intermediate regions. Electronmicroscopic and electron-diffraction-pattern examination shows that following normalizing from 920°C comparatively large undissolved particles of vanadium nitrides remain in the steel, whereas at normalizing from higher temperatures these particles get dissolved in the austenite and segregate in fine-disperse form on cooling; such a segrega-

Card 2/3